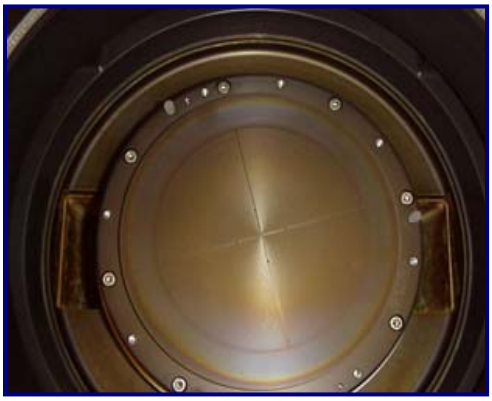
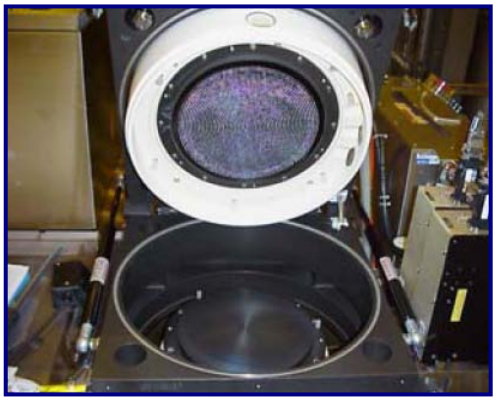


Foamtec International
Wilshire Contamination Control Division
cleaning critical surfaces



VACUUM CHAMBER PM TECHNIQUE
LAM 4520 Oxide ETCH Chamber

OBJECTIVE:

TO EFFECTIVELY PM THE LAM 4520 OXIDE ETCH CHAMBER IN A TIMELY MANNER, WHILE IMPROVING TOOL RECOVERY AND PARTICLE PERFORMANCE

Vacuum Chamber: LAM 4520 OXIDE ETCHER
Vacuum Chamber Process Residue: PROCESS INDUCED RESIDUE
Vacuum Chamber Components: CHAMBER, WAFER CHUCK PARTS

Old Procedure: Scotch-Brite™, IPA, and wipers
Tool recovery: Clean time 1 hour

New Procedure: <1 hour using 800 Grit Diamond ScrubPAD, DI water & IPA
Tool recovery: ????

Vacuum Chamber Products:

- (1) HT4580D 800 Grit Diamond ScrubPAD
- (5) HT4669 UltraSORB® Wipers
- (1) HT4754 UltraSOLV® Sponge
- (1) FTPEN-1 ScrubWRIGHT™ Pen
- (1) HT4580DW-5 800 Grit Diamond ScrubBelt®
- (2) HT5790S-5 MiraWIPES®

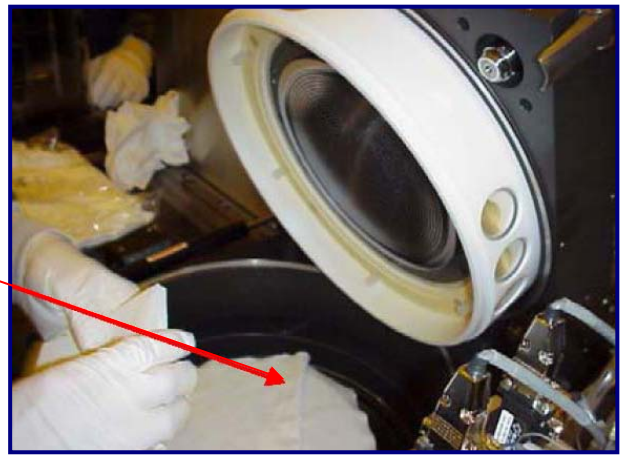
LAM 4520 OXIDE ETCH CHAMBER PM PROCEDURE:

View "How to" instructional videos on http://www.foamtecintlwcc.com/flash/

Step 1: Using proper procedures and **safety guidelines**, shutdown and prepare LAM 4520 chamber for wet clean

Step 2: Wafer chuck is covered with standard clean room wipers (See Fig 1)

Fig 1: Protect the wafer chuck with clean room wipes

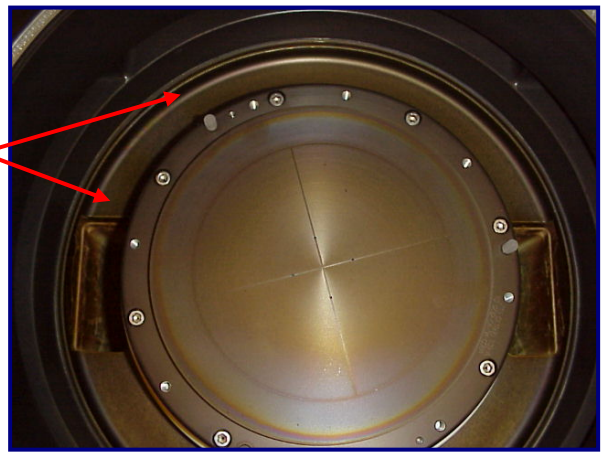


Step 3: Chamber is then wiped down using the UltraSORB® foam wipers and IPA. The foam wipers allow operator to wipe all areas of the process chamber without snagging or tearing the wiper

Step 4: Take **lightly dampened** 800D Grit Diamond ScrubPAD and proceed to scrub off deposition from OXIDE ETCH chamber bottom and walls (See Fig 2)

NOTE: Important to keep area a little moist with IPA

Fig 2: Use 800 Grit Diamond ScrubPAD to clean chamber walls and bottom. It may help to fold the ScrubPAD in half



LAM 4520 OXIDE ETCH CHAMBER PM PROCEDURE (CONT'D):

Step 5: As Diamond ScrubPAD appears to load up with deposition, pull ScrubPAD across damp HT4754 UltraSOLV® Sponge. This will help keep ScrubPAD effectively removing oxide deposition from chamber (See Fig 3, 4 & 5)

Fig 3: ScrubPAD loaded with deposition

Fig 4: Pull ScrubPAD across UltraSOLV® Sponge

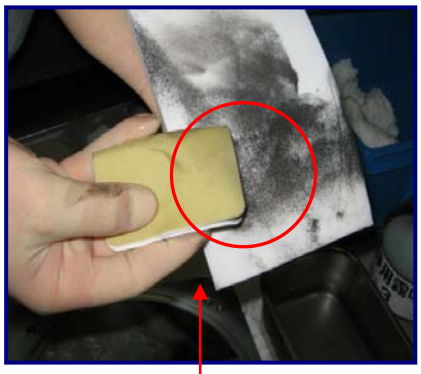


Fig 5: Unloaded ScrubPAD

Step 6: Continue to rinse UltraSOLV® Sponge as necessary to keep UltraSOLV® Sponge slightly moist and free of deposition (See Fig 6 & 7)

Fig 6: Loaded-up UltraSOLV® Sponge

Fig 7: UltraSOLV® Sponge AFTER rinse

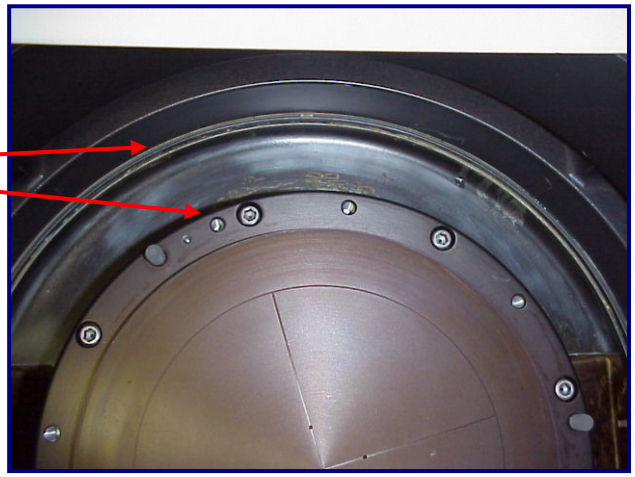
Step 7: Continue to repeat this **SCRUB – WIPE – RINSE** procedure outlined in steps 4 through 6 for the remainder of the LAM 4520 Oxide ETCH Chamber

Step 8: Use UltraSOLV® sponge to wipe the chamber clean during the scrub

LAM 4520 OXIDE ETCH CHAMBER PM PROCEDURE (CONT'D):

Step 9: After all scrubbing is complete, use the ScrubWRIGHT™ Pen with ScrubBelt® to clean the edges of the wafer chuck and the lip around the outside of the chamber (See Fig 8)

Fig 8: Areas to use ScrubWRIGHT™ Pen



LAM 4520 OXIDE ETCH CHAMBER FINAL WIPE PROCEDURE:

IMPORTANT NOTE

MUST FOLLOW ENTIRE FOAMTEC INTERNATIONAL FINAL WIPE PROCEDURE WITH HT5790S MiraWIPES® IN ORDER TO HELP WITH AN EFFECTIVE TOOL RECOVERY. THE MICRO-FIBER CHARACTERISTICS OF THIS PRODUCT HELPS REMOVE MORE DEPOSITION FROM THE PARTS THAN ANY OTHER STANDARD FAB WIPER

NOTE: Figure below shows how much more deposition the Foamtec International MiraWIPE® can remove from a critical surface compared to the standard fab wiper, making the MiraWIPE® FINAL WIPE PROCEDURE the most **CRITICAL STEP** of the PM procedure (See Fig 9a & 9b)

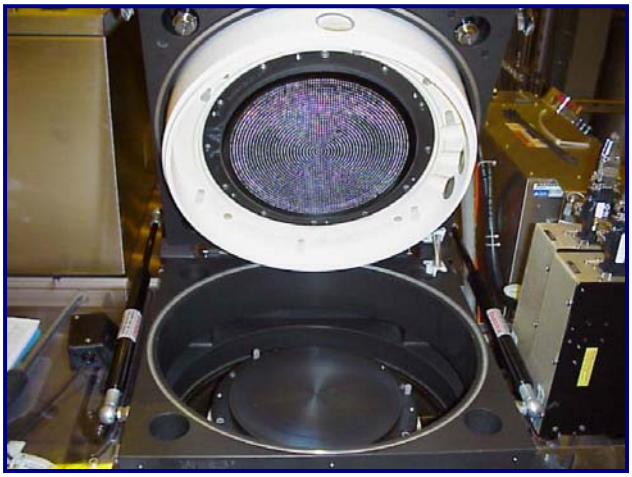
Fig 9a: Current fab wiper after completely wiping LAM 4520

Fig 9b: Particles picked up using HT5790S MiraWIPES® after completely wiping with current fab wiper

MiraWIPES® are the KEY STEP for DEFECT REDUCTION and IMPROVED TOOL RECOVERY

LAM 4520 OXIDE ETCH CHAMBER PM PROCEDURE (CONT'D):

Step 10: Use the MiraWIPE® wipers to perform the final wipe of the chamber before installing new shields



Step 11: Follow proper tool recovery guidelines as outlined by LAM Research Corporation